

Application No. 09/890,695
Filed: August 3, 2001
Group Art Unit: 1754

AMENDMENT TO THE CLAIMS

Claim 1. (Currently Amended) A method of obtaining a carbon fiber fabric by ~~continuously~~ carbonizing a cellulose fiber fabric, the method being characterized in that the fabric travelling continuously through a carbonization chamber is subjected to heat treatment comprising:

(a) admitting a cellulose fiber fabric to be carbonized through an inlet to a carbonization chamber;

(b) causing the cellulose fiber fabric to be subjected to a heat treatment by travelling continuously through the carbonization chamber between said inlet and an outlet of the carbonization chamber, wherein a method of said heat treatment comprises:

-(i) an initial stage for bringing the temperature of the cellulose fiber fabric entering the carbonization chamber to a value lying in the range 250°C to 350°C, the initial stage comprising temperature rise at a first mean speed lying in the range 10°C/min to 60°C/min;

(ii) —an intermediate stage for raising the temperature of the fabric to a value lying in the range 350°C to 500°C, the intermediate stage comprising temperature rising at a second mean speed lower than the first and lying in the range 2°C/min to 10°C/min; and

(iii) —a final stage for raising the temperature of the fabric to a value lying in the range 500°C to 750°C, the final stage comprising temperature rising at a third mean speed greater than the second and lying in the range 5°C/min to 40°C/min.; and

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(c) retrieving a carbon fiber fabric resulting from carbonization of said cellulose fiber fabric at the outlet of the carbonization chamber.

Claim 2. (Original) A method according to claim 1, characterized in that the fabric is caused to travel through the chamber via successive zones, each of which has a controlled temperature therein.

Claim 3. (Previously Amended) A method according to claim 1, characterized in that the transit time of the fabric through the chamber lies in the range 20 min to 2 h.

Claim 4. (Previously Amended) A method according to claim 1, characterized in that, prior to carbonization, the fabric is subjected to relaxation treatment at a temperature lying in the range 100°C to 250°C.

Claim 5. (Original) A method according to claim 4, characterized in that the relaxation treatment is performed in air.

Claim 6. (Previously Amended) A method according to claim 4, characterized in that the relaxation treatment is performed for a duration lying in the range 15 min to 3 h.

Claim 7. (Previously Amended) A method according to claim 1, characterized in that the carbonized fabric is subjected to high temperature heat treatment lying in the range 1000°C to 2800°C after it has passed through the carbonization chamber.

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Claim 8. (Original) A method according to claim 7, characterized in that the high temperature heat treatment is performed for a duration lying in the range 1 min to 10 min.

Claim 9. (Previously Amended) A method according to claim 1, characterized in that the carbonized fabric is subjected to activation treatment.

Claim 10. (Previously Added) A method according to claim 2, characterized in that the transit time of the fabric through the chamber lies in the range 20 min to 2 h.

Claim 11. (Previously Added) A method according to claim 2, characterized in that, prior to carbonization, the fabric is subjected to relaxation treatment at a temperature lying in the range 100°C to 250°C.

Claim 12. (Previously Added) A method according to claim 5, characterized in that the relaxation treatment is performed for a duration lying in the range 15 min to 3 h.

Claim 13. (Previously Added) A method according to claim 2, characterized in that:

prior to carbonization, the fabric is subjected to relaxation treatment in air at a temperature lying in the range 100°C to 250°C; and

the relaxation treatment is performed for a duration lying in the range 15 min to 3 h.

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Claim 14. (Previously Added) A method according to claim 13, characterized in that:

the carbonized fabric is subjected to high temperature heat treatment lying in the range 1000°C to 2800°C after it has passed through the carbonization chamber; and

the high temperature heat treatment is performed for a duration lying in the range 1 min to 10 min.

Claim 15. (Previously Added) A method according to claim 13, characterized in that the carbonized fabric is subjected to activation treatment.

Claim 16. (Previously Added) A method according to claim 14, characterized in that the carbonized fabric is subjected to activation treatment.